

Interim Guidance on Military Use of Insect Repellents

The AFPMB currently has no evidence that picaridin and oil of lemon eucalyptus at EPA-approved concentrations are equal to or better than DEET for military applications, so there will be no immediate change in DoD recommendations to include them. The AFPMB Repellents Committee will review the two products' efficacy data, safety data, and other features and determine if either or both should be adopted for military use. If you would like additional information, please contact us via the [AFPMB Webmaster](#), or via our Web page at www.AFPMB.org.

It is important to understand that CDC's recommendations are based on EPA-registered products and their repellency of mosquito species found in the U.S., whereas DEET's reputation is based on a fifty-year history of worldwide use against a variety of vector species – mosquitoes, sand flies, black flies, tsetse flies, etc.

Observations that might help with risk communication in the interim:

- Media releases* make statements such as "often comparable with DEET products of similar concentration" and oil of lemon eucalyptus provides protection time "similar to low-concentration DEET products in two recent studies." This suggests they are almost as good as DEET – not as good or better – and they don't say what kind of concentration of the newer products is being used.
- "DEET was developed by the U.S. Department of Agriculture in 1946 and has been registered with the Environmental Protection Agency as an approved active ingredient since 1957." DEET has an incomparable record of efficacy and safety when you take into account the number of times it has been applied and the diversity of users over the years.
- "Consumers tend to like picaridin repellents because they are more pleasant to the skin and don't have the odor that DEET repellents have." Odor is a concern in some military operations – if picaridin and oil of lemon eucalyptus have too strong an odor, they may not be usable in certain kinds of operations. If they are an attractant to stinging insects, like bees or wasps, or cause an allergic reaction, like some scented products do, they may not be usable in certain conditions.
- "...oil of lemon eucalyptus is a natural ingredient, which appeals to those who don't like the thought of putting chemicals on their skin." This statement implies that oil of lemon eucalyptus is not a chemical – it is, of course – its IUPAC chemical name is *cis-&-trans-p-menthane-3,8-diols*. If the media called it that, would it still appeal to people? If DEET's discoverers had named it "oil of gladiolus" or something like that instead of the acronym for its chemical name (n,n-diethyl-meta-toluamide), would it have the public relations problem it has?

- Picaridin's IUPAC chemical name is (RS)-sec-butyl-2-(2-hydroxyethyl)piperidine-1-carboxylate – same comments as above.

- "... said...a product manager for the [trademarked brand] line of insect repellents by [a commercial manufacturer]." Some positive inputs to the media releases come from people with a proprietary interest – manufacturers, retailers, etc. – people who stand to make a profit from sales, not people who are charged with keeping combat troops healthy in hostile environments around the world. Their frame of reference is not the same as that of a military preventive medicine professional, so their objectivity has to be weighed when considering their claims.

- "You can do so much to tell people what to use but if they're not using it you have to go to something else. I think this will have a positive impact on public health." Compliance is definitely an important issue, and if you have better compliance with picaridin or oil of lemon eucalyptus and get "some rather than none" protection, that is a positive. The military can rely on compliance based on a direct order to use a product (similar to prophylactic medications), which doesn't work with the general public – however, it also is not 100% effective with troops.

- "[a specific brand] introduced a picaridin-based repellent in January...and it has been marketing a repellent with oil of lemon eucalyptus since 2002." Not even near the 45+ year record DEET use has, so the risk:benefit database is much less comprehensive.

- The products provide four and six hours of protection, respectively..." Some of the product formulations are not effective for nearly as long as DEET is – DEET has a 6-hour minimum effectiveness under controlled environmental conditions, and much longer in many cases.

*All quotes are from "CDC Pushing New Mosquito Repellents" by Daniel Yee, Associated Press Writer, on the World Wide Web at http://hosted.ap.org/dynamic/stories/W/WEST_NILE?SITE=DCTMS&SECTION=HOME&TEMPLATE=DEFAULT , 29 April 2005.

Background on CDC's recommendations is available at <http://www.cdc.gov/ncidod/dvbid/westnile/RepellentUpdates.htm>

OPR: AFPMB, 3 May 2005